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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|------------------------------|------------------|
| 10/780,440 | 02/17/2004 | Sumio Kawai | OOCL-152 (6MHA-03S0555P1) | 6170 |
| 26479 | 7590 | 09/12/2011 | EXAMINER | |
| STRAUB & POKOTYLO 788 Shrewsbury Avenue TINTON FALLS, NJ 07724 | | | AGGARWAL, YOGESH K | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2622 | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|-------------------------------------|--|
| Office Action Summary | Application No. 10/780,440 | Applicant(s) KAWAI ET AL. | |
| | Examiner YOGESH AGGARWAL | Art Unit 2622 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 June 2011.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) ☒ Claim(s) 1 and 15-19 is/are pending in the application.
- 5a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 6) ☐ Claim(s) ____ is/are allowed.
- 7) ☒ Claim(s) 1 and 15-19 is/are rejected.
- 8) ☐ Claim(s) ____ is/are objected to.
- 9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 06/28/2011 has been entered.

Response to Arguments

2. Applicant's arguments with respect to claims 1 and 15-19 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1 and 15-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida (US PG-PUB 20010026112) in view of Imaizumi et al. (US Patent # 5,170,288).

[Claim 1]

Yoshida teaches a photographing device provided with a dust removing mechanism comprising a photoelectric conversion element which converts an optical image of an object to an electric signal (a camera as taught in Paragraph 15 has a photoelectric conversion element);

Art Unit: 2622

a piezoelectric element (26, figure 1) provided at a peripheral portion of the optical element (piezoelectric element is provided at a peripheral portion of a the lens L coupled to a driving element);

a drive circuit (14) which supplies a drive signal to the piezoelectric element (26) to the piezoelectric element to drive the piezoelectric element (Paragraphs 50 and 51, figure 4 teaches expansion and contraction frequencies close to resonance frequencies) and

a control circuit (22, figure 1) which causes the piezoelectric element (26) to vibrate via the drive circuit (Paragraph 67)

Yoshida fails to teach causing flexural standing wave vibration in the optical element , the control circuit being configured to cause at least two flexural standing wave vibration in the optical element at different nodes of vibration by changing control modes with time. However Imaizumi teaches a control unit 30L that generates different voltages at two different times (changing control modes with time as shown in figures 3a and 3b and col. 3 lines 53-68) that generate a standing wave vibration in the mirror 1 at two different nodes (col. 4 lines 1-13, figure 3c clearly shows at least two flexural standing wave vibration in the optical element at different nodes of vibration by changing control modes with time) so as to remove all the dirt like water droplets or dust from the optical element.

Therefore taking the combined teachings of Yoshida and Imaizumi, it would be obvious to one skilled in the art at the time of the invention to have been motivated to have caused at least two flexural standing wave vibration in the optical element at different nodes of vibration by changing control modes with time into the system of Yoshida in order to remove any dirt particles effectively from the photoelectric device thereby outputting a good quality image.

Art Unit: 2622

[Claim 15]

Imaizumi teaches wherein the control circuit causes the piezoelectric element (2a and 2b) to vibrate at a frequency corresponding to a resonance frequency of the optical element, to thereby cause flexural standing wave vibration in the optical element (col. 3 lines 53-col. 4 line 13, figures 3a-3c).

[Claim 16]

Imaizumi teaches wherein the control circuit changes a frequency at which the piezoelectric element vibrates, to thereby cause at least two flexural standing wave vibrations in the optical element (col. 3 lines 44-46).

[Claim 17]

Imaizumi teaches wherein the flexural standing wave vibration has an amplitude of vibration in a direction perpendicular to an optical element surface of the optical element (see figure 3c).

[Claim 18]

Yoshida teaches a control method for a photographing device (figure 1) provided with a dust removing mechanism (10) which removes dusts from an optical element (lens L) arranged in a photographing light path, the method comprising a drive circuit (14) which supplies a drive signal to the piezoelectric element (26) to the piezoelectric element to drive the piezoelectric element (Paragraphs 50 and 51, figure 4 teaches expansion and contraction frequencies close to resonance frequencies). Yoshida fails to teach generating a first flexural standing wave vibration in the optical element and generating a second flexural standing wave vibration different from the first flexural standing wave vibration to remove dusts from a position corresponding to a node of the first flexural standing wave vibration.

Art Unit: 2622

However Imaizumi teaches generating a first flexural standing wave vibration in the optical element (figure 3a); and generating a second flexural standing wave vibration different from the first flexural standing wave vibration to remove dusts from a position corresponding to a node of the first flexural standing wave vibration (figure 3b shows a second different standing wave and figure 3c shows two standing waves wherein the nodes of the standing waves intersect with each other thereby the dust of first node would be removed by the vibration of the nodes second wave. This is similar to applicant's specification figure 11 wherein nodes 26a and 26b are shown to be intersecting).

Therefore taking the combined teachings of Yoshida and Imaizumi, it would be obvious to one skilled in the art at the time of the invention to have been motivated to have caused at generating a first flexural standing wave vibration in the optical element and generating a second flexural standing wave vibration different from the first flexural standing wave vibration to remove dusts from a position corresponding to a node of the first flexural standing wave vibration in order to remove any dirt particles effectively from the photoelectric device thereby outputting a good quality image.

[Claim 19]

Imaizumi teaches wherein the second flexural standing wave vibration is generated in the position corresponding to the node of the first flexural standing wave vibration (see figure 3c, wherein the second standing wave is generated in the node of the first wave similar to applicant's specification in figure 11).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to YOGESH AGGARWAL whose telephone number is (571)272-7360. The examiner can normally be reached on M-F 9:00AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on (571)-272-7564. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Yogesh K Aggarwal/
Primary Examiner, Art Unit 2622